PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of

Yasuharu YOSHIDA

Appln. No.: 09/921,714

Confirmation No.: 8770

Filed: August 6, 2001

Docket No: Q65726

Group Art Unit: 2617

Examiner: Matthew W. GENACK

For: ON-VEHICLE RADIO COMMUNICATION EQUIPMENT, A DEDICATED SHORT RANGE COMMUNICATION SYSTEM, AND ON-VEHICLE RADIO COMMUNICATION METHOD

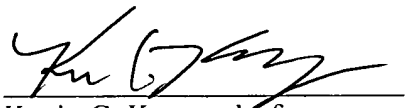
SUBMISSION OF APPEAL BRIEF

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith please find an Appeal Brief. A check for the statutory fee of $500.00 is attached. The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account. A duplicate copy of this paper is attached.

Respectfully submitted,



Kevin C. Kunzendorf
Registration No. 58,308

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE
23373
CUSTOMER NUMBER

Date: January 30, 3007

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of

Yasuharu YOSHIDA

Appln. No.: 09/921,714

Confirmation No.: 8770

Filed: August 6, 2001

Docket No: Q65726

Group Art Unit: 2617

Examiner: Matthew W. GENACK

For: ON-VEHICLE RADIO COMMUNICATION EQUIPMENT, A DEDICATED SHORT RANGE COMMUNICATION SYSTEM, AND ON-VEHICLE RADIO COMMUNICATION METHOD

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with the provisions of 37 C.F.R. § 41.37, Appellant submits the following:

Table of Contents

I. REAL PARTY IN INTEREST

The real party in interest in this appeal is NEC Corporation by virtue of an Assignment executed by the inventor and submitted to the U.S. Patent and Trademark Office on August 6, 2001, which was recorded on the same date at Reel 012060, Frame 0121.

II. RELATED APPEALS AND INTERFERENCES

There are no known appeals or interferences that will affect, be directly affected by, or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-13 are all of the claims pending in the application. Claims 1-13 stand finally rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,275,552 to Ando (hereinafter "Ando"), in view of U.S. Patent No. 5,806,002 to Wiatrowski, et al (hereinafter "Wiatrowski"). All of the claims are set forth in the attached Appendix.

IV. STATUS OF AMENDMENTS

On September 8, 2006, after the Final Office Action mailed on June 9, 2006, Appellants filed a Response Under 37 C.F.R. § 1.116, in which no claims were amended. On October 11, 2006, an Advisory Action was issued indicating that the September 8, 2006 Response was considered and that after consideration, claims 1-13 remain finally rejected. Accordingly, the claims stand as presented before the Final Office Action of June 9, 2006.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

Exemplary embodiments of the present invention relate to a communication system for dedicated short range communications used in an intelligent transport system, and more specifically, to a dedicated short range communication system used in service zones where a plurality of services exist. (page 1, lines 6-10).

In a related art dedicated short range communication system, an on-vehicle dedicated short range communication equipment (on-vehicle equipment) communicates with a fixed roadside equipment. (see page 1, line 22 to page 2, line 10). The roadside equipment transmits a signal having a frequency of F1 or F2, corresponding to a certain service to be provided to the on-vehicle equipment, and the on-vehicle equipment receives the signal. The on-vehicle equipment then transmits a signal having a frequency of F1' o F2' to the roadside equipment, which receives the signal. (see page 3, lines 1-9). In the related art system, the on-vehicle equipment receives both radio frequencies F1 and F2 in a certain search repetition period. The on-vehicle equipment first attempts to receive a signal on frequency F1. After the passage of F1 search reception time, the on-vehicle equipment starts searching for a signal on radio frequency F2. (see page 3, line 16 to page 4, line 1).

As the number of services increases the number of radio frequencies transmitted from the various roadside equipment also increases. Thus, the on-vehicle equipment must search each additional frequency, which results in a disadvantage in that it requires a long time to complete the scanning and connection to the roadside equipment.

To address this and other disadvantages of the related art, the claimed invention is directed to a communication system for dedicated short range communication capably of successfully operating in respect of a service using a high speed link connection, and hence, a short time to connection.

Claim 1 is directed to an on-vehicle dedicated short range communication equipment (FIG. 1, #2; page 9, line 4). The claimed equipment comprises:

searching means (FIG. 1, on-vehicle equipment 2; page 1, lines 25-27; receiver, page 9, lines 4-6) for performing search for radio frequencies used by a roadside dedicated short range communication equipment with which the on-vehicle dedicated short range communication equipment is going to have a dedicated short range communication (page 9, lines 3-9); and

establishing means (FIG. 1, on-vehicle equipment 2; page 1, lines 25-27; transmitter, page 9, lines 4-6) for establishing a link for the dedicated short range communication with said roadside dedicated short range communication equipment at the searched for radio frequencies (page 9, lines 10-17),

wherein said searching means performs the search by cyclically switching radio frequencies from one to another while keeping a first ratio that radio frequencies for a first type of communication (FIG. 1, service 1, F1, F2) are searched for larger than a second ratio that radio frequencies for a second type of communication (FIG. 1, service 2, 3; F3, F4, F5, F6) are searched for, wherein the ratio for a first type communication is the scanning time spent searching for a first type of communication, divided by a total scan period, and the ratio for the second type of communication is the scanning time spent searching for a second type of

communication divided by the total scan period (FIG. 1, #2, 4, 8; page 8, lines 19-28; page 10, line 19 to page 11, line 13; FIG. 2, item 2).

Claim 2 is directed to an on-vehicle dedicated short range communication equipment (FIG. 1, #2; page 9, line 4). The claimed equipment comprises:

searching means (FIG. 1, on-vehicle equipment 2; page 1, lines 25-27; receiver, page 9, lines 4-6) for performing search for radio frequencies used by a roadside dedicated short range communication equipment with which the on-vehicle dedicated short range communication equipment is going to have a dedicated short range communication (page 9, lines 3-9); and

establishing means (FIG. 1, on-vehicle equipment 2; page 1, lines 25-27; transmitter, page 9, lines 4-6) for establishing a link for the dedicated short range communication with said roadside dedicated short range communication equipment at the searched for radio frequencies (page 9, lines 10-17),

wherein said searching means performs the search by cyclically switching radio frequencies from one to another while keeping a first ratio that radio frequencies for a first type of communication (FIG. 1, service 1, F1, F2) are searched for larger than a second ratio that radio frequencies for a second type of communication (FIG. 1, service 2, 3; F3, F4, F5, F6) are searched for, wherein the ratio for a first type communication is the scanning time spent searching for a first type of communication, divided by a total scan period, and the ratio for the second type of communication is the scanning time spent searching for a second type of communication divided by the total scan period (FIG. 1, #2, 4, 8; page 8, lines 19-28; page 10, line 19 to page 11, line 13; FIG. 2, item 2),

wherein said first type of communication is a communication requiring high-speed link establishment (FIG. 1, service 1; page 10, lines 14-16), and

wherein said second type of communication is a communication not requiring high-speed link establishment (FIG. 1, service 2, 3; page 10, lines 15-18).

Claim 4 is directed to an on-vehicle dedicated short range communication equipment (FIG. 1, #2; page 9, line 4). The claimed equipment comprises:

searching means (FIG. 1, on-vehicle equipment 2; page 1, lines 25-27; receiver, page 9, lines 4-6) for performing search for radio frequencies used by a roadside dedicated short range communication equipment with which the on-vehicle dedicated short range communication equipment is going to have a dedicated short range communication (page 9, lines 3-9); and

establishing means (FIG. 1, on-vehicle equipment 2; page 1, lines 25-27; transmitter, page 9, lines 4-6) for establishing a link for the dedicated short range communication with said roadside dedicated short range communication equipment at the searched for radio frequencies (page 9, lines 10-17),

wherein said searching means performs the search by cyclically switching radio frequencies from one to another while keeping a first ratio that radio frequencies for a first type of communication (FIG. 1, service 1, F1, F2) are searched for larger than a second ratio that radio frequencies for a second type of communication (FIG. 1, service 2, 3; F3, F4, F5, F6) are searched for, wherein the ratio for a first type communication is the scanning time spent searching for a first type of communication, divided by a total scan period, and the ratio for the second type of communication is the scanning time spent searching for a second type of

communication divided by the total scan period (FIG. 1, #2, 4, 8; page 8, lines 19-28; page 10, line 19 to page 11, line 13; FIG. 2, item 2),

wherein said searching means switches demodulation method when switching radio frequencies (page 13, lines 1-10).

Claim 8 is directed to an on-vehicle dedicated short range communication method (page 6, lines 24-26). The method comprises:

a searching step for performing search for radio frequencies used by a roadside dedicated short range communication equipment with which the on-vehicle dedicated short range communication equipment is going to have a dedicated short range communication (page 9, lines 3-9); and

an establishing step for establishing a link for the dedicated short range communication with said roadside dedicated short range communication equipment at the searched for radio frequencies (page 9, lines 10-17),

wherein said searching step performs the search by cyclically switching radio frequencies from one to another while keeping a first ratio that radio frequencies for a first type of communication are searched for larger than a second ratio that radio frequencies for a second type of communication are searched for, wherein the ratio for a first type communication is the scanning time spent searching for a first type of communication, divided by a total scan period, and the ration fot he second type of communication is the scanning time spent searching for a second type of communication divided by the total scan time (FIG. 1, #2, 4, 8; page 8, lines 19-28; page 10, line 19 to page 11, line 13; FIG. 2, item 2).

Claim 9 is directed to an on-vehicle dedicated short range communication method (page 6, lines 24-26). The method comprises:

a searching step for performing search for radio frequencies used by a roadside dedicated short range communication equipment with which the on-vehicle dedicated short range communication equipment is going to have a dedicated short range communication (page 9, lines 3-9); and

an establishing step for establishing a link for the dedicated short range communication with said roadside dedicated short range communication equipment at the searched for radio frequencies (page 9, lines 10-17),

wherein said searching step performs the search by cyclically switching radio frequencies from one to another while keeping a first ratio that radio frequencies for a first type of communication are searched for larger than a second ratio that radio frequencies for a second type of communication are searched for, wherein the ratio for a first type communication is the scanning time spent searching for a first type of communication, divided by a total scan period, and the ration fot he second type of communication is the scanning time spent searching for a second type of communication divided by the total scan time (FIG. 1, #2, 4, 8; page 8, lines 19-28; page 10, line 19 to page 11, line 13; FIG. 2, item 2),

wherein said first type of communication is a communication requiring high-speed link establishment (FIG. 1, service 1; page 10, lines 14-16), and

wherein said second type of communication is a communication not requiring high-speed link establishment (FIG. 1, service 2, 3; page 10, lines 15-18).

Claim 11 is directed to an on-vehicle dedicated short range communication method (page 6, lines 24-26). The method comprises:

a searching step for performing search for radio frequencies used by a roadside dedicated short range communication equipment with which the on-vehicle dedicated short range communication equipment is going to have a dedicated short range communication (page 9, lines 3-9); and

an establishing step for establishing a link for the dedicated short range communication with said roadside dedicated short range communication equipment at the searched for radio frequencies (page 9, lines 10-17),

wherein said searching step performs the search by cyclically switching radio frequencies from one to another while keeping a first ratio that radio frequencies for a first type of communication are searched for larger than a second ratio that radio frequencies for a second type of communication are searched for, wherein the ratio for a first type communication is the scanning time spent searching for a first type of communication, divided by a total scan period, and the ration fot he second type of communication is the scanning time spent searching for a second type of communication divided by the total scan time (FIG. 1, #2, 4, 8; page 8, lines 19-28; page 10, line 19 to page 11, line 13; FIG. 2, item 2),

wherein said searching step switches demodulation method when switching radio frequencies (page 13, lines 1-10).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. The final rejection of claims 1, 3, 5, 6, and 7 under 35 U.S.C. § 103(a) as being unpatentable over Ando in view of Wiatrowski.

B. The final rejection of claim 2 under 35 U.S.C. § 103(a) as being unpatentable over Ando in view of Wiatrowski.

C. The final rejection of claim 4 under 35 U.S.C. § 103(a) as being unpatentable over Ando in view of Wiatrowski.

D. The final rejection of claims 8, 10, 12 and 13 under 35 U.S.C. § 103(a) as being unpatentable over Ando in view of Wiatrowski.

E. The final rejection of claim 9 under 35 U.S.C. § 103(a) as being unpatentable over Ando in view of Wiatrowski.

F. The final rejection of claim 11 under 35 U.S.C. § 103(a) as being unpatentable over Ando in view of Wiatrowski.

VII. ARGUMENT

Appellant respectfully submits that claims 1-13 would not have been rendered obvious based on the arguments which follow.

A. CLAIMS 1, 3, 5, 6, 7

1. A Person of Ordinary Skill in the Art Would Not Have Been Motivated to Combine the Teachings of the Ando and Wiatrowski References

Appellant respectfully submits that one of ordinary skill in the art would not have been motivated to combine the teachings of the cited Ando and Wiatrowski references to produce the claimed invention.

In rejecting independent claim 1, the Examiner cites Ando as disclosing the establishing means, but acknowledges that Ando does not disclose the searching means as set forth in claim 1. The Examiner thus cites Wiatrowski as allegedly curing this deficiency. The Examiner suggests that it would have been obvious to one of ordinary skill in the art to modify the teachings of Ando by providing the cyclical switching of Wiatrowski. As motivation to combine the teachings, the Examiner suggests that one of ordinary skill in the art would have been motivated to make the modification to Ando because of the enhanced efficiency in causing the receiver's receiver to spend a greater amount of time searching for high priority frequencies. Appellant respectfully disagrees with the Examiner's position.

Ando is directed at a system for data communication using synchronizing signals of different data lengths (see col. 1, lines 16-20). Such synchronizing signals are needed in communications systems such as those used in toll booths, where a vehicle drives by the toll

booth and automatically has the owner's account decreased by the amount of the toll. In such a system, a long data length for the synchronization signal has a benefit in providing increased reliability of the data transmitted because the risk of being unable to synchronize is decreased (col. 1, lines 27-30). However, the longer data length also causes problems because the communications time in sending the longer data is also increased (see col. 1, lines 30-35). This is a problem for a fast-moving automobile passing by the toll plaza. Thus, it is desirable to have shorter, quicker communications. (Abstract; col. 1, lines 25-57), and Ando proposes using a plurality of synchronizing signals of differing lengths. (Col. 1, lines 60-63).

However, Appellant notes that in the toll booth context of Ando, only one set frequency is necessary, since transceivers on both sides are known. Thus, Ando describes the tollgate transceiver and the on board equipment (OBE) transceiver as having only one transmit and one receive frequency. (See Col. 5, lines 1-50, specifically lines 11-22, 29-42). The frequencies f1 and f2 are the local oscillator frequencies of the tollgate and the OBE, respectively. They are not switched, and the fact that they are different only serves to illustrate that the OBE and the tollgate may use different oscillator crystals, for example, to synthesize the carrier frequency being used.

Moreover, in order to handle multiple vehicles and the increased communications traffic, the Ando system uses time-division multiple access to allow simultaneous communication between the system and a plurality of vehicles. (see col. 7, lines 34-36). Thus, having only one communications channel in the frequency domain, i.e. a transmit and a receive frequency, is not an issue for Ando.

Thus, in summary, the Ando system seeks to improve the speed of communications in order to accommodate faster speeds of vehicles moving through the tollgate by using a time-divided multiple access method having a slotted system, and to employ a simple battery powered transceiver in the OBE in order to reduce size and visibility of the OBE device.

By contrast, Wiatrowski is directed to a scanning method in which the system switches between multiple channels having multiple assigned priorities. (col. 1, lines 5-17; Fig. 2). Wiatrowski relates to "priority scanning", with an objective being to realize a system in which a terminal capable of receiving a plurality of channels can receive a preferred priority channel, and specifically of inhibiting a priority scan when a non-priority communication is received. See col. 2, lines 27-29. After the terminal has received a non-priority channel, the priority channel is scanned. Thus, Wiatrowski is directed at the operation of the terminal after the terminal has received the non-priority channel, and is therefore based on the assumption of reception of a plurality of channels in a series.

Appellant respectfully submits that one having ordinary skill in the art would not have been motivated to combine the Ando and Wiatrowski teachings for the following reasons. First, modifying the Ando system to include the frequency switching capabilities of Wiatrowski introduces needless complexity into the OBE-tollgate system. Second, because of this complexity, the complexity, size, and cost of the OBE device of Ando is increased, in direct contravention to a stated goal of Ando (see, e.g., col. 2 lines 56-57). Third, as discussed above, the system of Ando uses a fixed frequency to both transmit and receive data, and Ando provides no suggestion that multiple frequencies would even be desirable or useful. Specifically, Ando

uses a time division multiple access communication method to pack information into one channel, as discussed at col. 7, lines 34-36 of Ando. Fourth, and most importantly, switching frequencies, as described in Wiatrowski, would take additional time, both to switch the frequency (i.e., for the local oscillators to re-lock) and to negotiate on which frequency to communicate. This additional time specifically frustrates the time division multiple access solution that Ando proposes, and thus teaches away from the combination.

On page 2 of the Advisory Action, the Examiner responds to Appellant's arguments. Specifically, with respect to the motivation to combine argument, the Examiner asserts that Ando teaches using multiple frequencies at col. 8, lines 37-42. However, Appellant disagrees with this assertion. At col. 8, lines 37-42, Ando describes a communication procedure and a frame configuration including message data slot (MDS) and an activation slot (ACTS). Ando then describes that the MDS is multiplexed using transmission channels, each of which uses a different frequency for the down-link and for the up-link. In other words, the road side equipment (RSE) sends an FCMS/MDS frame over a number of different frequencies, and the on board equipment receives this frame and sends an acknowledgement at its own frequency. By this method, the RSE is able to communicate with multiple OBEs each on a different downlink frequency. However, Appellant notes that the OBE still only transmits at one frequency.

Furthermore, the Examiner has not responded to Appellant's arguments that Ando teaches away from combination with Wiatrowski because 1) Ando implements a time division multiple access method of packing data into the channel, 2) that implementing frequency scanning in Ando would increase the cost and complexity of the OBE in direct contravention of a

stated goal of Ando, and 3) that most importantly, far from being more efficient, as the Examiner maintains, implementing frequency scanning in Ando would increase the time it takes for the devices communicate.

Accordingly, Appellant respectfully submits that one having ordinary skill in the art would not have been motivated to combine the teachings of Ando and Wiatrowski in order to derive the invention as claimed, for example, in claim 1. Since the teachings of neither Ando nor Wiatrowski, taken alone, meet all the limitations as set forth in claim 1 -- as acknowledged by the Examiner -- claim 1 is patentable.

2. Even assuming that the Teachings of Ando and Wiatrowski may be Combined, the Resulting Combination Does Not Teach All the Features of the Claimed Invention

Even assuming *arguendo* that the Ando and Wiatrowski reference may be combined, the combination still does not teach all of the limitations recited by the claims.

For example, claim 1 sets forth the feature wherein said searching means performs the search by cyclically switching radio frequencies from one to another while keeping a first ratio that radio frequencies for a first type of communication are searched for larger than a second ratio that radio frequencies for a second type of communication are searched for, wherein the ratio for a first type communication is the scanning time spent searching for a first type of communication, divided by a total scan period, and the ratio for the second type of communication is the scanning time spent searching for a second type of communication divided by the total scan period. The Examiner maintains that this feature is taught by Fig. 2 of Wiatrowski. However, Appellant respectfully disagrees with the Examiner's position.

At Fig. 2A, Wiatrowski shows a diagram showing priority scanning. At discussed at col. 4, lines 10-25, in the "no activity" time interval, communication unit 105 "switches between" channels 1, 2, 3, and 4, "in turn" until activity is detected. Wiatrowski then goes on to give representative "scan sequences" which "may be configured to suit the particular needs of a user." However, nothing in this description suggests any ratio of scanning time, or more specifically that a ratio for a first type of communication is larger than that of a second type of communication. When a reference does not disclose that drawings are to scale and is silent as to dimensions, arguments based on measurement of the drawing features are of little value. See MPEP § 2125. In this case, Appellant respectfully submits that Fig. 2A of Wiatrowski is provided merely to show the *sequences* of the channels, i.e. that channel 2 is scanned after channel 1, and not for the periodicity (or lack thereof) of the switching. Appellant notes also that there is no specific disclosure of a scanning method in Wiatrowski. Ando contains no teachings relevant to this issue, as acknowledged by the Examiner. Therefore, claim 1 is patentable over the Wiatrowski and Ando combination for at least this reason. The remaining claims are patentable based on their respective dependencies.

B. CLAIM 2

1. A Person of Ordinary Skill in the Art Would Not Have Been Motivated to Combine the Teachings of the Ando and Wiatrowski References

Appellant respectfully submits that one of ordinary skill in the art would not have been motivated to combine the teachings of the cited Ando and Wiatrowski references to produce the claimed invention.

In rejecting claim 2, the Examiner cites Ando as disclosing the establishing means, but acknowledges that Ando does not disclose the searching means as set forth in claim 2. The Examiner thus cites Wiatrowski as allegedly curing this deficiency. The Examiner suggests that it would have been obvious to one of ordinary skill in the art to modify the teachings of Ando by providing the cyclical switching of Wiatrowski. As motivation to combine the teachings, the Examiner suggests that one of ordinary skill in the art would have been motivated to make the modification to Ando because of the enhanced efficiency in causing the receiver's receiver to spend a greater amount of time searching for high priority frequencies. Appellant respectfully disagrees with the Examiner's position.

Ando is directed at a system for data communication using synchronizing signals of different data lengths (see col. 1, lines 16-20). Such synchronizing signals are needed in communications systems such as those used in toll booths, where a vehicle drives by the toll booth and automatically has the owner's account decreased by the amount of the toll. In such a system, a long data length for the synchronization signal has a benefit in providing increased reliability of the data transmitted because the risk of being unable to synchronize is decreased (col. 1, lines 27-30). However, the longer data length also causes problems because the communications time in sending the longer data is also increased (see col. 1, lines 30-35). This is a problem for a fast-moving automobile passing by the toll plaza. Thus, it is desirable to have shorter, quicker communications. (Abstract; col. 1, lines 25-57), and Ando proposes using a plurality of synchronizing signals of differing lengths. (Col. 1, lines 60-63).

However, Appellant notes that in the toll booth context of Ando, only one set frequency is necessary, since transceivers on both sides are known. Thus, Ando describes the tollgate transceiver and the on board equipment (OBE) transceiver as having only one transmit and one receive frequency. (See Col. 5, lines 1-50, specifically lines 11-22, 29-42). The frequencies f1 and f2 are the local oscillator frequencies of the tollgate and the OBE, respectively. They are not switched, and the fact that they are different only serves to illustrate that the OBE and the tollgate may use different oscillator crystals, for example, to synthesize the carrier frequency being used.

Moreover, in order to handle multiple vehicles and the increased communications traffic, the Ando system uses time-division multiple access to allow simultaneous communication between the system and a plurality of vehicles. (see col. 7, lines 34-36). Thus, having only one communications channel in the frequency domain, i.e. a transmit and a receive frequency, is not an issue for Ando.

Thus, in summary, the Ando system seeks to improve the speed of communications in order to accommodate faster speeds of vehicles moving through the tollgate by using a time-divided multiple access method having a slotted system, and to employ a simple battery powered transceiver in the OBE in order to reduce size and visibility of the OBE device.

By contrast, Wiatrowski is directed to a scanning method in which the system switches between multiple channels having multiple assigned priorities. (col. 1, lines 5-17; Fig. 2). Wiatrowski relates to "priority scanning", with an objective being to realize a system in which a terminal capable of receiving a plurality of channels can receive a preferred priority channel, and

specifically of inhibiting a priority scan when a non-priority communication is received. See col. 2, lines 27-29. After the terminal has received a non-priority channel, the priority channel is scanned. Thus, Wiatrowski is directed at the operation of the terminal after the terminal has received the non-priority channel, and is therefore based on the assumption of reception of a plurality of channels in a series.

Appellant respectfully submits that one having ordinary skill in the art would not have been motivated to combine the Ando and Wiatrowski teachings for the following reasons. First, modifying the Ando system to include the frequency switching capabilities of Wiatrowski introduces needless complexity into the OBE-tollgate system. Second, because of this complexity, the complexity, size, and cost of the OBE device of Ando is increased, in direct contravention to a stated goal of Ando (see, e.g., col. 2 lines 56-57). Third, as discussed above, the system of Ando uses a fixed frequency to both transmit and receive data, and Ando provides no suggestion that multiple frequencies would even be desirable or useful. Specifically, Ando uses a time division multiple access communication method to pack information into one channel, as discussed at col. 7, lines 34-36 of Ando. Fourth, and most importantly, switching frequencies, as described in Wiatrowski, would take additional time, both to switch the frequency (i.e., for the local oscillators to re-lock) and to negotiate on which frequency to communicate. This additional time specifically frustrates the time division multiple access solution that Ando proposes, and thus teaches away from the combination.

On page 2 of the Advisory Action, the Examiner responds to Appellant's arguments. Specifically, with respect to the motivation to combine argument, the Examiner asserts that Ando

teaches using multiple frequencies at col. 8, lines 37-42. However, Appellant disagrees with this assertion. At col. 8, lines 37-42, Ando describes a communication procedure and a frame configuration including message data slot (MDS) and an activation slot (ACTS). Ando then describes that the MDS is multiplexed using transmission channels, each of which uses a different frequency for the down-link and for the up-link. In other words, the road side equipment (RSE) sends an FCMS/MDS frame over a number of different frequencies, and the on board equipment receives this frame and sends an acknowledgement at its own frequency. By this method, the RSE is able to communicate with multiple OBEs each on a different downlink frequency. However, Appellant notes that the OBE still only transmits at one frequency.

Furthermore, the Examiner has not responded to Appellant's arguments that Ando teaches away from combination with Wiatrowski because 1) Ando implements a time division multiple access method of packing data into the channel, 2) that implementing frequency scanning in Ando would increase the cost and complexity of the OBE in direct contravention of a stated goal of Ando, and 3) that most importantly, far from being more efficient, as the Examiner maintains, implementing frequency scanning in Ando would increase the time it takes for the devices communicate.

Accordingly, Appellant respectfully submits that one having ordinary skill in the art would not have been motivated to combine the teachings of Ando and Wiatrowski in order to derive the invention as claimed, for example, in claim 2. Since the teachings of neither Ando nor Wiatrowski, taken alone, meet all the limitations as set forth in claim 2 -- as acknowledged by the Examiner -- claim 2 is patentable.

2. Even assuming that the Teachings of Ando and Wiatrowski may be Combined, the Resulting Combination Does Not Teach All the Features of the Claimed Invention

Even assuming arguendo that the Ando and Wiatrowski reference may be combined, the combination still does not teach all of the limitations recited by the claims.

For example, claim 2 sets forth the feature that the first type of communication requires high-speed link establishment, and the second-type of communication does not require high-speed link establishment. The Examiner cites Wiatrowski at col. 9, lines 31-44 as teaching this feature. However, Appellant respectfully disagrees with the Examiner's position.

At the cited lines, Wiatrowski teaches different squelch rules, for example, a digital private line having a low speed binary signal, and data-or-squelch having a high speed data packet. However, as noted at col. 8, lines 58-67, different channels may be assigned the same frequency but different squelch rules. Thus, to the extent that Wiatrowski teaches high and low speed signals, Wiatrowski teaches their use in the same channel.

On page 2 of the Advisory Action, the Examiner responds to Appellant's argument, stating that "Wiatrowski does not state that different squelch rules must be assigned to the same frequency, rather only that this is possible." However, the Examiner's statement appears to be misplaced. Although Wiatrowski, at the table at col. 9, shows multiple channels, Appellant notes that all the channels are of the same frequency "A". Moreover, the table does not contain any information relating the various channels as priority or non-priority. Thus, though the squelch rules may show low speed signals and high speed data packets, there is no teaching in

Wiatrowski which links the speeds to a type of communication (priority, non-priority), as is set forth by claim 2.

Thus, Wiatrowski does not relate the speed to the type of communication, as set forth in claim 2. Ando contains no teachings on this issue, as acknowledged by the Examiner. Thus, claim 2 is patentable over the Ando and Wiatrowski combination for these reasons.

C. CLAIM 4

1. A Person of Ordinary Skill in the Art Would Not Have Been Motivated to Combine the Teachings of the Ando and Wiatrowski References

Appellant respectfully submits that one of ordinary skill in the art would not have been motivated to combine the teachings of the cited Ando and Wiatrowski references to produce the claimed invention.

In rejecting claim 4, the Examiner cites Ando as disclosing the establishing means, but acknowledges that Ando does not disclose the searching means as set forth in claim 4. The Examiner thus cites Wiatrowski as allegedly curing this deficiency. The Examiner suggests that it would have been obvious to one of ordinary skill in the art to modify the teachings of Ando by providing the cyclical switching of Wiatrowski. As motivation to combine the teachings, the Examiner suggests that one of ordinary skill in the art would have been motivated to make the modification to Ando because of the enhanced efficiency in causing the receiver's receiver to spend a greater amount of time searching for high priority frequencies. Appellant respectfully disagrees with the Examiner's position.

Ando is directed at a system for data communication using synchronizing signals of different data lengths (see col. 1, lines 16-20). Such synchronizing signals are needed in communications systems such as those used in toll booths, where a vehicle drives by the toll booth and automatically has the owner's account decreased by the amount of the toll. In such a system, a long data length for the synchronization signal has a benefit in providing increased reliability of the data transmitted because the risk of being unable to synchronize is decreased (col. 1, lines 27-30). However, the longer data length also causes problems because the communications time in sending the longer data is also increased (see col. 1, lines 30-35). This is a problem for a fast-moving automobile passing by the toll plaza. Thus, it is desirable to have shorter, quicker communications. (Abstract; col. 1, lines 25-57), and Ando proposes using a plurality of synchronizing signals of differing lengths. (Col. 1, lines 60-63).

However, Appellant notes that in the toll booth context of Ando, only one set frequency is necessary, since transceivers on both sides are known. Thus, Ando describes the tollgate transceiver and the on board equipment (OBE) transceiver as having only one transmit and one receive frequency. (See Col. 5, lines 1-50, specifically lines 11-22, 29-42). The frequencies f1 and f2 are the local oscillator frequencies of the tollgate and the OBE, respectively. They are not switched, and the fact that they are different only serves to illustrate that the OBE and the tollgate may use different oscillator crystals, for example, to synthesize the carrier frequency being used.

Moreover, in order to handle multiple vehicles and the increased communications traffic, the Ando system uses time-division multiple access to allow simultaneous communication

between the system and a plurality of vehicles. (see col. 7, lines 34-36). Thus, having only one communications channel in the frequency domain, i.e. a transmit and a receive frequency, is not an issue for Ando.

Thus, in summary, the Ando system seeks to improve the speed of communications in order to accommodate faster speeds of vehicles moving through the tollgate by using a time-divided multiple access method having a slotted system, and to employ a simple battery powered transceiver in the OBE in order to reduce size and visibility of the OBE device.

By contrast, Wiatrowski is directed to a scanning method in which the system switches between multiple channels having multiple assigned priorities. (col. 1, lines 5-17; Fig. 2). Wiatrowski relates to "priority scanning", with an objective being to realize a system in which a terminal capable of receiving a plurality of channels can receive a preferred priority channel, and specifically of inhibiting a priority scan when a non-priority communication is received. See col. 2, lines 27-29. After the terminal has received a non-priority channel, the priority channel is scanned. Thus, Wiatrowski is directed at the operation of the terminal after the terminal has received the non-priority channel, and is therefore based on the assumption of reception of a plurality of channels in a series.

Appellant respectfully submits that one having ordinary skill in the art would not have been motivated to combine the Ando and Wiatrowski teachings for the following reasons. First, modifying the Ando system to include the frequency switching capabilities of Wiatrowski introduces needless complexity into the OBE-tollgate system. Second, because of this complexity, the complexity, size, and cost of the OBE device of Ando is increased, in direct

contravention to a stated goal of Ando (see, e.g., col. 2 lines 56-57). Third, as discussed above, the system of Ando uses a fixed frequency to both transmit and receive data, and Ando provides no suggestion that multiple frequencies would even be desirable or useful. Specifically, Ando uses a time division multiple access communication method to pack information into one channel, as discussed at col. 7, lines 34-36 of Ando. Fourth, and most importantly, switching frequencies, as described in Wiatrowski, would take additional time, both to switch the frequency (i.e., for the local oscillators to re-lock) and to negotiate on which frequency to communicate. This additional time specifically frustrates the time division multiple access solution that Ando proposes, and thus teaches away from the combination.

On page 2 of the Advisory Action, the Examiner responds to Appellant's arguments. Specifically, with respect to the motivation to combine argument, the Examiner asserts that Ando teaches using multiple frequencies at col. 8, lines 37-42. However, Appellant disagrees with this assertion. At col. 8, lines 37-42, Ando describes a communication procedure and a frame configuration including message data slot (MDS) and an activation slot (ACTS). Ando then describes that the MDS is multiplexed using transmission channels, each of which uses a different frequency for the down-link and for the up-link. In other words, the road side equipment (RSE) sends an FCMS/MDS frame over a number of different frequencies, and the on board equipment receives this frame and sends an acknowledgement at its own frequency. By this method, the RSE is able to communicate with multiple OBEs each on a different downlink frequency. However, Appellant notes that the OBE still only transmits at one frequency.

Furthermore, the Examiner has not responded to Appellant's arguments that Ando teaches away from combination with Wiatrowski because 1) Ando implements a time division multiple access method of packing data into the channel, 2) that implementing frequency scanning in Ando would increase the cost and complexity of the OBE in direct contravention of a stated goal of Ando, and 3) that most importantly, far from being more efficient, as the Examiner maintains, implementing frequency scanning in Ando would increase the time it takes for the devices communicate.

Accordingly, Appellant respectfully submits that one having ordinary skill in the art would not have been motivated to combine the teachings of Ando and Wiatrowski in order to derive the invention as claimed, for example, in claim 4. Since the teachings of neither Ando nor Wiatrowski, taken alone, meet all the limitations as set forth in claim 4 -- as acknowledged by the Examiner -- claim 4 is patentable.

2. Even assuming that the Teachings of Ando and Wiatrowski may be Combined, the Resulting Combination Does Not Teach All the Features of the Claimed Invention

Even assuming arguendo that the Ando and Wiatrowski reference may be combined, the combination still does not teach all of the limitations recited by the claims.

For example, claim 4 recites the feature of switching demodulation types. The Examiner argues that this feature is taught by Wiatrowski at col. 2, lines 28-33, col. 6, lines 62-67, col. 7, lines 34-41, and col. 9, lines 1-26. However, Appellant respectfully disagrees with the Examiner's position. To the extent that these portions of Wiatrowski discuss modulation, they discuss modulation as a rule or test for determining whether priority scanning may be inhibited.

On page 2 of the Advisory Action, the Examiner addresses Appellant's argument. The Examiner maintains that Wiatrowski switches demodulation types because the Examiner maintains that the receiver must be able to demodulate a signal on a given frequency according to the channel's modulation type. However, Appellant disagrees with the Examiner's position.

The table in col. 9 of Wiatrowski does show different modulation types. However, Appellant notes that each channel is on the same transmit and receive frequency "A" and "B" respectively. Thus, the table does not show changing frequencies, and therefore it cannot logically show changing demodulation types. By contrast, claim 4 recites that the switching means switches demodulation method when switching radio frequencies (and not when switching channels).

Thus, Appellant respectfully submits that Wiatrowski does not teach a searching means which switches demodulation method when switching radio frequencies. Ando does not cure this deficiency. Therefore, claim 4 is patentable over the Ando and Wiatrowski combination.

D. CLAIMS 8, 10, 12, 13

1. A Person of Ordinary Skill in the Art Would Not Have Been Motivated to Combine the Teachings of the Ando and Wiatrowski References

Appellant respectfully submits that one of ordinary skill in the art would not have been motivated to combine the teachings of the cited Ando and Wiatrowski references to produce the claimed invention.

In rejecting independent claim 8, the Examiner cites Ando as disclosing the establishing step, but acknowledges that Ando does not disclose the searching step as set forth in claim 8.

The Examiner thus cites Wiatrowski as allegedly curing this deficiency. The Examiner suggests that it would have been obvious to one of ordinary skill in the art to modify the teachings of Ando by providing the cyclical switching of Wiatrowski. As motivation to combine the teachings, the Examiner suggests that one of ordinary skill in the art would have been motivated to make the modification to Ando because of the enhanced efficiency in causing the receiver's receiver to spend a greater amount of time searching for high priority frequencies. Appellant respectfully disagrees with the Examiner's position.

Ando is directed at a system for data communication using synchronizing signals of different data lengths (see col. 1, lines 16-20). Such synchronizing signals are needed in communications systems such as those used in toll booths, where a vehicle drives by the toll booth and automatically has the owner's account decreased by the amount of the toll. In such a system, a long data length for the synchronization signal has a benefit in providing increased reliability of the data transmitted because the risk of being unable to synchronize is decreased (col. 1, lines 27-30). However, the longer data length also causes problems because the communications time in sending the longer data is also increased (see col. 1, lines 30-35). This is a problem for a fast-moving automobile passing by the toll plaza. Thus, it is desirable to have shorter, quicker communications. (Abstract; col. 1, lines 25-57), and Ando proposes using a plurality of synchronizing signals of differing lengths. (Col. 1, lines 60-63).

However, Appellant notes that in the toll booth context of Ando, only one set frequency is necessary, since transceivers on both sides are known. Thus, Ando describes the tollgate transceiver and the on board equipment (OBE) transceiver as having only one transmit and one

receive frequency. (See Col. 5, lines 1-50, specifically lines 11-22, 29-42). The frequencies f1 and f2 are the local oscillator frequencies of the tollgate and the OBE, respectively. They are not switched, and the fact that they are different only serves to illustrate that the OBE and the tollgate may use different oscillator crystals, for example, to synthesize the carrier frequency being used.

Moreover, in order to handle multiple vehicles and the increased communications traffic, the Ando system uses time-division multiple access to allow simultaneous communication between the system and a plurality of vehicles. (see col. 7, lines 34-36). Thus, having only one communications channel in the frequency domain, i.e. a transmit and a receive frequency, is not an issue for Ando.

Thus, in summary, the Ando system seeks to improve the speed of communications in order to accommodate faster speeds of vehicles moving through the tollgate by using a time-divided multiple access method having a slotted system, and to employ a simple battery powered transceiver in the OBE in order to reduce size and visibility of the OBE device.

By contrast, Wiatrowski is directed to a scanning method in which the system switches between multiple channels having multiple assigned priorities. (col. 1, lines 5-17; Fig. 2). Wiatrowski relates to "priority scanning", with an objective being to realize a system in which a terminal capable of receiving a plurality of channels can receive a preferred priority channel, and specifically of inhibiting a priority scan when a non-priority communication is received. See col. 2, lines 27-29. After the terminal has received a non-priority channel, the priority channel is scanned. Thus, Wiatrowski is directed at the operation of the terminal after the terminal has

received the non-priority channel, and is therefore based on the assumption of reception of a plurality of channels in a series.

Appellant respectfully submits that one having ordinary skill in the art would not have been motivated to combine the Ando and Wiatrowski teachings for the following reasons. First, modifying the Ando system to include the frequency switching capabilities of Wiatrowski introduces needless complexity into the OBE-tollgate system. Second, because of this complexity, the complexity, size, and cost of the OBE device of Ando is increased, in direct contravention to a stated goal of Ando (see, e.g., col. 2 lines 56-57). Third, as discussed above, the system of Ando uses a fixed frequency to both transmit and receive data, and Ando provides no suggestion that multiple frequencies would even be desirable or useful. Specifically, Ando uses a time division multiple access communication method to pack information into one channel, as discussed at col. 7, lines 34-36 of Ando. Fourth, and most importantly, switching frequencies, as described in Wiatrowski, would take additional time, both to switch the frequency (i.e., for the local oscillators to re-lock) and to negotiate on which frequency to communicate. This additional time specifically frustrates the time division multiple access solution that Ando proposes, and thus teaches away from the combination.

On page 2 of the Advisory Action, the Examiner responds to Appellant's arguments. Specifically, with respect to the motivation to combine argument, the Examiner asserts that Ando teaches using multiple frequencies at col. 8, lines 37-42. However, Appellant disagrees with this assertion. At col. 8, lines 37-42, Ando describes a communication procedure and a frame configuration including message data slot (MDS) and an activation slot (ACTS). Ando then

describes that the MDS is multiplexed using transmission channels, each of which uses a different frequency for the down-link and for the up-link. In other words, the road side equipment (RSE) sends an FCMS/MDS frame over a number of different frequencies, and the on board equipment receives this frame and sends an acknowledgement at its own frequency. By this method, the RSE is able to communicate with multiple OBEs each on a different downlink frequency. However, Appellant notes that the OBE still only transmits at one frequency.

Furthermore, the Examiner has not responded to Appellant's arguments that Ando teaches away from combination with Wiatrowski because 1) Ando implements a time division multiple access method of packing data into the channel, 2) that implementing frequency scanning in Ando would increase the cost and complexity of the OBE in direct contravention of a stated goal of Ando, and 3) that most importantly, far from being more efficient, as the Examiner maintains, implementing frequency scanning in Ando would increase the time it takes for the devices communicate.

Accordingly, Appellant respectfully submits that one having ordinary skill in the art would not have been motivated to combine the teachings of Ando and Wiatrowski in order to derive the invention as claimed, for example, in claim 8. Since the teachings of neither Ando nor Wiatrowski, taken alone, meet all the limitations as set forth in claim 8 -- as acknowledged by the Examiner -- claim 8 is patentable.

2. Even assuming that the Teachings of Ando and Wiatrowski may be Combined, the Resulting Combination Does Not Teach All the Features of the Claimed Invention

Even assuming arguendo that the Ando and Wiatrowski reference may be combined, the combination still does not teach all of the limitations recited by the claims.

For example, claim 8 sets forth the feature wherein said searching step performs the search by cyclically switching radio frequencies from one to another while keeping a first ratio that radio frequencies for a first type of communication are searched for larger than a second ratio that radio frequencies for a second type of communication are searched for, wherein the ratio for a first type communication is the scanning time spent searching for a first type of communication, divided by a total scan period, and the ratio for the second type of communication is the scanning time spent searching for a second type of communication divided by the total scan period. The Examiner maintains that this feature is taught by Fig. 2 of Wiatrowski. However, Appellant respectfully disagrees with the Examiner's position.

At Fig. 2A, Wiatrowski shows a diagram showing priority scanning. At discussed at col. 4, lines 10-25, in the "no activity" time interval, communication unit 105 "switches between" channels 1, 2, 3, and 4, "in turn" until activity is detected. Wiatrowski then goes on to give representative "scan sequences" which "may be configured to suit the particular needs of a user." However, nothing in this description suggests any ratio of scanning time, or more specifically that a ratio for a first type of communication is larger than that of a second type of communication. When a reference does not disclose that drawings are to scale and is silent as to dimensions, arguments based on measurement of the drawing features are of little value. See MPEP § 2125. In this case, Appellant respectfully submits that Fig. 2A of Wiatrowski is provided merely to show the *sequences* of the channels, i.e. that channel 2 is scanned after

channel 1, and not for the periodicity (or lack thereof) of the switching. Appellant notes also that there is no specific disclosure of a scanning method in Wiatrowski. Ando contains no teachings relevant to this issue, as acknowledged by the Examiner. Therefore, claim 8 is patentable over the Wiatrowski and Ando combination for at least this reason. The remaining claims are patentable based on their respective dependencies.

E. CLAIM 9

1. A Person of Ordinary Skill in the Art Would Not Have Been Motivated to Combine the Teachings of the Ando and Wiatrowski References

Appellant respectfully submits that one of ordinary skill in the art would not have been motivated to combine the teachings of the cited Ando and Wiatrowski references to produce the claimed invention.

In rejecting claim 9, the Examiner cites Ando as disclosing the establishing step, but acknowledges that Ando does not disclose the searching step as set forth in claim 9. The Examiner thus cites Wiatrowski as allegedly curing this deficiency. The Examiner suggests that it would have been obvious to one of ordinary skill in the art to modify the teachings of Ando by providing the cyclical switching of Wiatrowski. As motivation to combine the teachings, the Examiner suggests that one of ordinary skill in the art would have been motivated to make the modification to Ando because of the enhanced efficiency in causing the receiver's receiver to spend a greater amount of time searching for high priority frequencies. Appellant respectfully disagrees with the Examiner's position.

Ando is directed at a system for data communication using synchronizing signals of different data lengths (see col. 1, lines 16-20). Such synchronizing signals are needed in communications systems such as those used in toll booths, where a vehicle drives by the toll booth and automatically has the owner's account decreased by the amount of the toll. In such a system, a long data length for the synchronization signal has a benefit in providing increased reliability of the data transmitted because the risk of being unable to synchronize is decreased (col. 1, lines 27-30). However, the longer data length also causes problems because the communications time in sending the longer data is also increased (see col. 1, lines 30-35). This is a problem for a fast-moving automobile passing by the toll plaza. Thus, it is desirable to have shorter, quicker communications. (Abstract; col. 1, lines 25-57), and Ando proposes using a plurality of synchronizing signals of differing lengths. (Col. 1, lines 60-63).

However, Appellant notes that in the toll booth context of Ando, only one set frequency is necessary, since transceivers on both sides are known. Thus, Ando describes the tollgate transceiver and the on board equipment (OBE) transceiver as having only one transmit and one receive frequency. (See Col. 5, lines 1-50, specifically lines 11-22, 29-42). The frequencies f1 and f2 are the local oscillator frequencies of the tollgate and the OBE, respectively. They are not switched, and the fact that they are different only serves to illustrate that the OBE and the tollgate may use different oscillator crystals, for example, to synthesize the carrier frequency being used.

Moreover, in order to handle multiple vehicles and the increased communications traffic, the Ando system uses time-division multiple access to allow simultaneous communication

between the system and a plurality of vehicles. (see col. 7, lines 34-36). Thus, having only one communications channel in the frequency domain, i.e. a transmit and a receive frequency, is not an issue for Ando.

Thus, in summary, the Ando system seeks to improve the speed of communications in order to accommodate faster speeds of vehicles moving through the tollgate by using a time-divided multiple access method having a slotted system, and to employ a simple battery powered transceiver in the OBE in order to reduce size and visibility of the OBE device.

By contrast, Wiatrowski is directed to a scanning method in which the system switches between multiple channels having multiple assigned priorities. (col. 1, lines 5-17; Fig. 2). Wiatrowski relates to "priority scanning", with an objective being to realize a system in which a terminal capable of receiving a plurality of channels can receive a preferred priority channel, and specifically of inhibiting a priority scan when a non-priority communication is received. See col. 2, lines 27-29. After the terminal has received a non-priority channel, the priority channel is scanned. Thus, Wiatrowski is directed at the operation of the terminal after the terminal has received the non-priority channel, and is therefore based on the assumption of reception of a plurality of channels in a series.

Appellant respectfully submits that one having ordinary skill in the art would not have been motivated to combine the Ando and Wiatrowski teachings for the following reasons. First, modifying the Ando system to include the frequency switching capabilities of Wiatrowski introduces needless complexity into the OBE-tollgate system. Second, because of this complexity, the complexity, size, and cost of the OBE device of Ando is increased, in direct

contravention to a stated goal of Ando (see, e.g., col. 2 lines 56-57). Third, as discussed above, the system of Ando uses a fixed frequency to both transmit and receive data, and Ando provides no suggestion that multiple frequencies would even be desirable or useful. Specifically, Ando uses a time division multiple access communication method to pack information into one channel, as discussed at col. 7, lines 34-36 of Ando. Fourth, and most importantly, switching frequencies, as described in Wiatrowski, would take additional time, both to switch the frequency (i.e., for the local oscillators to re-lock) and to negotiate on which frequency to communicate. This additional time specifically frustrates the time division multiple access solution that Ando proposes, and thus teaches away from the combination.

On page 2 of the Advisory Action, the Examiner responds to Appellant's arguments. Specifically, with respect to the motivation to combine argument, the Examiner asserts that Ando teaches using multiple frequencies at col. 8, lines 37-42. However, Appellant disagrees with this assertion. At col. 8, lines 37-42, Ando describes a communication procedure and a frame configuration including message data slot (MDS) and an activation slot (ACTS). Ando then describes that the MDS is multiplexed using transmission channels, each of which uses a different frequency for the down-link and for the up-link. In other words, the road side equipment (RSE) sends an FCMS/MDS frame over a number of different frequencies, and the on board equipment receives this frame and sends an acknowledgement at its own frequency. By this method, the RSE is able to communicate with multiple OBEs each on a different downlink frequency. However, Appellant notes that the OBE still only transmits at one frequency.

Furthermore, the Examiner has not responded to Appellant's arguments that Ando teaches away from combination with Wiatrowski because 1) Ando implements a time division multiple access method of packing data into the channel, 2) that implementing frequency scanning in Ando would increase the cost and complexity of the OBE in direct contravention of a stated goal of Ando, and 3) that most importantly, far from being more efficient, as the Examiner maintains, implementing frequency scanning in Ando would increase the time it takes for the devices communicate.

Accordingly, Appellant respectfully submits that one having ordinary skill in the art would not have been motivated to combine the teachings of Ando and Wiatrowski in order to derive the invention as claimed, for example, in claim 9. Since the teachings of neither Ando nor Wiatrowski, taken alone, meet all the limitations as set forth in claim 9 -- as acknowledged by the Examiner -- claim 9 is patentable.

2. Even assuming that the Teachings of Ando and Wiatrowski may be Combined, the Resulting Combination Does Not Teach All the Features of the Claimed Invention

Even assuming arguendo that the Ando and Wiatrowski reference may be combined, the combination still does not teach all of the limitations recited by the claims.

For example, claim 9 sets forth the feature that the first type of communication requires high-speed link establishment, and the second-type of communication does not require high-speed link establishment. The Examiner cites Wiatrowski at col. 9, lines 31-44 as teaching this feature. However, Appellant respectfully disagrees with the Examiner's position.

At the cited lines, Wiatrowski teaches different squelch rules, for example, a digital private line having a low speed binary signal, and data-or-squelch having a high speed data packet. However, as noted at col. 8, lines 58-67, different channels may be assigned the same frequency but different squelch rules. Thus, to the extent that Wiatrowski teaches high and low speed signals, Wiatrowski teaches their use in the same channel.

On page 2 of the Advisory Action, the Examiner responds to Appellant's argument, stating that "Wiatrowski does not state that different squelch rules must be assigned to the same frequency, rather only that this is possible." However, the Examiner's statement appears to be misplaced. Although Wiatrowski, at the table at col. 9, shows multiple channels, Appellant notes that all the channels are of the same frequency "A". Moreover, the table does not contain any information relating the various channels as priority or non-priority. Thus, though the squelch rules may show low speed signals and high speed data packets, there is no teaching in Wiatrowski which links the speeds to a type of communication (priority, non-priority), as is set forth by claim 9.

Thus, Wiatrowski does not relate the speed to the type of communication, as set forth in claim 9. Ando contains no teachings on this issue, as acknowledged by the Examiner. Thus, claim 9 is patentable over the Ando and Wiatrowski combination for these reasons.

F. CLAIM 11

1. A Person of Ordinary Skill in the Art Would Not Have Been Motivated to Combine the Teachings of the Ando and Wiatrowski References

Appellant respectfully submits that one of ordinary skill in the art would not have been motivated to combine the teachings of the cited Ando and Wiatrowski references to produce the claimed invention.

In rejecting claim 11, the Examiner cites Ando as disclosing the establishing step, but acknowledges that Ando does not disclose the searching step as set forth in claim 11. The Examiner thus cites Wiatrowski as allegedly curing this deficiency. The Examiner suggests that it would have been obvious to one of ordinary skill in the art to modify the teachings of Ando by providing the cyclical switching of Wiatrowski. As motivation to combine the teachings, the Examiner suggests that one of ordinary skill in the art would have been motivated to make the modification to Ando because of the enhanced efficiency in causing the receiver's receiver to spend a greater amount of time searching for high priority frequencies. Appellant respectfully disagrees with the Examiner's position.

Ando is directed at a system for data communication using synchronizing signals of different data lengths (see col. 1, lines 16-20). Such synchronizing signals are needed in communications systems such as those used in toll booths, where a vehicle drives by the toll booth and automatically has the owner's account decreased by the amount of the toll. In such a system, a long data length for the synchronization signal has a benefit in providing increased reliability of the data transmitted because the risk of being unable to synchronize is decreased (col. 1, lines 27-30). However, the longer data length also causes problems because the communications time in sending the longer data is also increased (see col. 1, lines 30-35). This is a problem for a fast-moving automobile passing by the toll plaza. Thus, it is desirable to have

shorter, quicker communications. (Abstract; col. 1, lines 25-57), and Ando proposes using a plurality of synchronizing signals of differing lengths. (Col. 1, lines 60-63).

However, Appellant notes that in the toll booth context of Ando, only one set frequency is necessary, since transceivers on both sides are known. Thus, Ando describes the tollgate transceiver and the on board equipment (OBE) transceiver as having only one transmit and one receive frequency. (See Col. 5, lines 1-50, specifically lines 11-22, 29-42). The frequencies f1 and f2 are the local oscillator frequencies of the tollgate and the OBE, respectively. They are not switched, and the fact that they are different only serves to illustrate that the OBE and the tollgate may use different oscillator crystals, for example, to synthesize the carrier frequency being used.

Moreover, in order to handle multiple vehicles and the increased communications traffic, the Ando system uses time-division multiple access to allow simultaneous communication between the system and a plurality of vehicles. (see col. 7, lines 34-36). Thus, having only one communications channel in the frequency domain, i.e. a transmit and a receive frequency, is not an issue for Ando.

Thus, in summary, the Ando system seeks to improve the speed of communications in order to accommodate faster speeds of vehicles moving through the tollgate by using a time-divided multiple access method having a slotted system, and to employ a simple battery powered transceiver in the OBE in order to reduce size and visibility of the OBE device.

By contrast, Wiatrowski is directed to a scanning method in which the system switches between multiple channels having multiple assigned priorities. (col. 1, lines 5-17; Fig. 2).

Wiatrowski relates to "priority scanning", with an objective being to realize a system in which a terminal capable of receiving a plurality of channels can receive a preferred priority channel, and specifically of inhibiting a priority scan when a non-priority communication is received. See col. 2, lines 27-29. After the terminal has received a non-priority channel, the priority channel is scanned. Thus, Wiatrowski is directed at the operation of the terminal after the terminal has received the non-priority channel, and is therefore based on the assumption of reception of a plurality of channels in a series.

Appellant respectfully submits that one having ordinary skill in the art would not have been motivated to combine the Ando and Wiatrowski teachings for the following reasons. First, modifying the Ando system to include the frequency switching capabilities of Wiatrowski introduces needless complexity into the OBE-tollgate system. Second, because of this complexity, the complexity, size, and cost of the OBE device of Ando is increased, in direct contravention to a stated goal of Ando (see, e.g., col. 2 lines 56-57). Third, as discussed above, the system of Ando uses a fixed frequency to both transmit and receive data, and Ando provides no suggestion that multiple frequencies would even be desirable or useful. Specifically, Ando uses a time division multiple access communication method to pack information into one channel, as discussed at col. 7, lines 34-36 of Ando. Fourth, and most importantly, switching frequencies, as described in Wiatrowski, would take additional time, both to switch the frequency (i.e., for the local oscillators to re-lock) and to negotiate on which frequency to communicate. This additional time specifically frustrates the time division multiple access solution that Ando proposes, and thus teaches away from the combination.

On page 2 of the Advisory Action, the Examiner responds to Appellant's arguments. Specifically, with respect to the motivation to combine argument, the Examiner asserts that Ando teaches using multiple frequencies at col. 8, lines 37-42. However, Appellant disagrees with this assertion. At col. 8, lines 37-42, Ando describes a communication procedure and a frame configuration including message data slot (MDS) and an activation slot (ACTS). Ando then describes that the MDS is multiplexed using transmission channels, each of which uses a different frequency for the down-link and for the up-link. In other words, the road side equipment (RSE) sends an FCMS/MDS frame over a number of different frequencies, and the on board equipment receives this frame and sends an acknowledgement at its own frequency. By this method, the RSE is able to communicate with multiple OBEs each on a different downlink frequency. However, Appellant notes that the OBE still only transmits at one frequency.

Furthermore, the Examiner has not responded to Appellant's arguments that Ando teaches away from combination with Wiatrowski because 1) Ando implements a time division multiple access method of packing data into the channel, 2) that implementing frequency scanning in Ando would increase the cost and complexity of the OBE in direct contravention of a stated goal of Ando, and 3) that most importantly, far from being more efficient, as the Examiner maintains, implementing frequency scanning in Ando would increase the time it takes for the devices communicate.

Accordingly, Appellant respectfully submits that one having ordinary skill in the art would not have been motivated to combine the teachings of Ando and Wiatrowski in order to derive the invention as claimed, for example, in claim 11. Since the teachings of neither Ando

nor Wiatrowski, taken alone, meet all the limitations as set forth in claim 11 -- as acknowledged by the Examiner -- claim 11 is patentable.

2. Even assuming that the Teachings of Ando and Wiatrowski may be Combined, the Resulting Combination Does Not Teach All the Features of the Claimed Invention

Even assuming *arguendo* that the Ando and Wiatrowski reference may be combined, the combination still does not teach all of the limitations recited by the claims.

For example, claim 11 recites the feature of switching demodulation types. The Examiner argues that this feature is taught by Wiatrowski at col. 2, lines 28-33, col. 6, lines 62-67, col. 7, lines 34-41, and col. 9, lines 1-26. However, Appellant respectfully disagrees with the Examiner's position. To the extent that these portions of Wiatrowski discuss modulation, they discuss modulation as a rule or test for determining whether priority scanning may be inhibited.

On page 2 of the Advisory Action, the Examiner addresses Appellant's argument. The Examiner maintains that Wiatrowski switches demodulation types because the Examiner maintains that the receiver must be able to demodulate a signal on a given frequency according to the channel's modulation type. However, Appellant disagrees with the Examiner's position.

The table in col. 9 of Wiatrowski does show different modulation types. However, Appellant notes that each channel is on the same transmit and receive frequency "A" and "B" respectively. Thus, the table does not show changing frequencies, and therefore it cannot logically show changing demodulation types. By contrast, claim 11 recites that the switching means switches demodulation method when switching radio frequencies (and not when switching channels).

Thus, Appellant respectfully submits that Wiatrowski does not teach a searching means which switches demodulation method when switching radio frequencies. Ando does not cure this deficiency. Therefore, claim 11 is patentable over the Ando and Wiatrowski combination.

VII. CONCLUSION

Unless a check is submitted herewith for the fee required under 37 C.F.R. §41.37(a) and 1.17(c), please charge said fee to Deposit Account No. 19-4880.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE
23373
CUSTOMER NUMBER

Kevin C. Kunzendorf
Registration No. 58,308

Date: January 30, 2007

CLAIMS APPENDIX

CLAIMS 1-13 ON APPEAL:

1. An on-vehicle dedicated short range communication equipment comprising:

searching means for performing search for radio frequencies used by a roadside dedicated short range communication equipment with which the on-vehicle dedicated short range communication equipment is going to have a dedicated short range communication; and

establishing means for establishing a link for the dedicated short range communication with said roadside dedicated short range communication equipment at the searched for radio frequencies,

wherein said searching means performs the search by cyclically switching radio frequencies from one to another while keeping a first ratio that radio frequencies for a first type of communication are searched for larger than a second ratio that radio frequencies for a second type of communication are searched for, wherein the ratio for a first type communication is the scanning time spent searching for a first type of communication, divided by a total scan period, and the ratio for the second type of communication is the scanning time spent searching for a second type of communication divided by the total scan period.

2. The on-vehicle dedicated short range communication equipment as set forth in claim 1,

wherein said first type of communication is a communication requiring high-speed link establishment, and

wherein said second type of communication is a communication not requiring high-speed link establishment.

3. The on-vehicle dedicated short range communication equipment as set forth in claim 1,

wherein said searching means keeps the ratio that the radio frequencies for the communication requiring high-speed link establishment is searched for larger than the ratio that the radio frequencies for the communication not requiring high-speed link establishment is searched for by increasing the number of times that the radio frequencies for the communication requiring high-speed link establishment is searched for.

4. The on-vehicle dedicated short range communication equipment as set forth in claim 1,

wherein said searching means switches demodulation method when switching radio frequencies.

5. The on-vehicle dedicated short range communication equipment as set forth in claim 1,

wherein radio frequencies used by roadside dedicated short range communication equipments are divided into groups,

wherein the group is designated before said searching means starts the search, and

wherein said searching means performs the search by cyclically switching radio frequencies in the designated group.

6. The on-vehicle dedicated short range communication equipment as set forth in claim 5,

wherein a part of a group overlaps a part of another group.

7. A dedicated short range communication system, comprising:

the on-vehicle dedicated short range communication equipment as set forth in any one of claims 1 to 6; and

roadside dedicated short range communication equipments.

8. An on-vehicle dedicated short range communication method comprising:

a searching step for performing search for radio frequencies used by a roadside dedicated short range communication equipment with which the on-vehicle dedicated short range communication equipment is going to have a dedicated short range communication; and

an establishing step for establishing a link for the dedicated short range communication with said roadside dedicated short range communication equipment at the searched for radio frequencies,

wherein said searching step performs the search by cyclically switching radio frequencies from one to another while keeping a first ratio that radio frequencies for a first type of

communication are searched for larger than a second ratio that radio frequencies for a second type of communication are searched for, wherein the ratio for a first type communication is the scanning time spent searching for a first type of communication, divided by a total scan period, and the ration fot he second type of communication is the scanning time spent searching for a second type of communication divided by the total scan time.

9. The on-vehicle dedicated short range communication method as set forth in claim 8,

wherein said first type of communication is a communication requiring high-speed link establishment, and

wherein said second type of communication is a communication not requiring high-speed link establishment.

10. The on-vehicle dedicated short range communication method as set forth in claim 8,

wherein said searching step keeps the ratio that the radio frequencies for the communication requiring high-speed link establishment is searched for larger than the ratio that the radio frequencies for the communication not requiring high-speed link establishment is searched for by increasing the number of times that the radio frequencies for the communication requiring high-speed link establishment is searched for.

11. The on-vehicle dedicated short range communication method as set forth in claim 8, wherein said searching step switches demodulation method when switching radio frequencies.

12. The on-vehicle dedicated short range communication method as set forth in claim 8, wherein radio frequencies used by roadside dedicated short range communication equipments are divided into groups,

wherein the group is designated before said searching means starts the search, and

wherein said searching step performs the search by cyclically switching radio frequencies in the designated group.

13. The on-vehicle dedicated short range communication method as set forth in claim 12, wherein a part of a group overlaps a part of another group.

EVIDENCE APPENDIX:

There has been no evidence submitted pursuant to 37 C.F.R. §§ 1.130, 1.131, or 1.132 or any other similar evidence.

RELATED PROCEEDINGS APPENDIX

There are no related proceedings.